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GEOLOGY AND PALÆONTOLOGY.

The Cave Bear of California.—In exploring a cavern in the Carboniferous limestone of Shasta county, Cal., James D. Richardson discovered the skull of a bear beneath several inches of cave earth and stalagmite. The specimen is in a good state of preservation, and demonstrates that the cave bear of that region was a species distinct alike from the cave bear of the East (*Ursus pristinus*), and from any of the existing species. In dimensions the skull equals that of the grizzly bear, but it is very differently proportioned. The muzzle is much shorter, and is wide, and descends obliquely downwards from the very convex frontal region. It wants the large postorbital processes of the grizzly, but has the tuberosities of the polar bear (*U. maritimus*), which it also resembles in the convexity of the front. Sagittal crest well developed. Three (one median and posterior) incisive foramina: three external infraorbital foramina. The teeth are large, and the series presents the peculiarity of being without diastema. The crowns of the premolars are not preserved, but if there were not three premolars, the second tooth has two well developed roots. First true molar with but two external and one internal tubercle. The absence of diastema renders it necessary to separate this bear from the true *Ursi*, and I propose to regard it, provisionally, as a species of *Arctotherium* Gerv. The canine teeth are large and compressed at the base. Length of cranium along base from below apex of union to premaxillary border, m. 0.387; length to posterior nares, .202; elevation of forehead vertically above the posterior extremity of the last molar, .141; width between inner border of posterior molars, .076. The species may be called *Arctotherium simum*.—*E. D. Cope.*

GEOGRAPHY AND TRAVELS.[1]

The Swedish Arctic Expedition.—An account of the voyage of the *Vega* up to August 27, 1878, at the mouth of the Lena river was given in our number for February last. After separating from the *Lena* they steered north-east toward the most southern of the New Siberian islands. These islands are remarkable for the numerous remains of the mammoth and a great quantity of coeval animal forms, which are found on them more abundantly than in the Tundra of the continent. A really thorough scientific examination of these islands has yet to be made.

Continuing on their course in the ice-free channel along the coast they reached the Baranov islands on the 3d of September. From here they passed through dense masses of floating ice until the 28th, when they were finally beset near the East cape, at Koljutschin bay 67° 6′ N. and 173° 15′ W., where they passed the winter. From letters from Prof. Nordenskiöld and from the correspondence of the New York *Herald*, we learn that the winter was a severe one; intense cold with constant north-west winds, with only rare intervals of mild weather, was experienced. Snow-storms were of almost continual occurrence. Three camps of Tschuktschi were on the shore near their anchorage. These savages possess many excellent traits. They are amiable, obliging and peaceable, both among themselves and towards strangers. Their complexion is a brownish-yellow, hair and eyes generally black. The features are less Mongolian in type than are those of the Esquimaux, or the other indigenous tribes of Siberia. The men are tall and the young women often of perfect symmetry and fine proportions. They trade frequently with the American shore, which is accessible in winter and summer over ice or the open sea. They live in tents, dress in skins and subsist on seals, reindeer, bears, fish and vegetables. The women are tattooed on the face. The language spoken by this tribe is peculiar, and so far shows no affinity to others. A lexicon of 300 words has been made by Lieut. Nordqvist.

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[1] Edited by Ellis H. Yarnall, Philadelphia.

During the whole period that the *Vega* remained at Koljutschin bay, hourly meteorological and magnetic observations were taken. The months of March, April and May were very cold. In June the temperature became more supportable. From the very slight rise and fall of the tide, Prof. Nordenskiöld believes the sea north of Behring strait must be small, and is probably circumscribed by islands between Wrangel land and the archipelago of which Prince Patrick's island is the most western now known. No sickness occurred on board, owing, doubtless, to an abundance of good provisions, including a little fresh meat even in the severest months, good discipline and the superior physique of the members of the expedition. The advancing spring brought large flocks of birds; many of these are supposed to winter in Japan and others in North America. Dr. Stuxberg has sent to the Academy of Science in Stockholm, a preparatory memoir regarding the numerous specimens collected by the dredge, during the voyage, of Crustacea, Echinodermata and Crinoida. Some are of extraordinary size and not previously known. This portion of the Arctic sea, though comparatively poor in Algæ, afforded many specimens corresponding in the western portion to the European and in the eastern to the Pacific varieties. Large collections of mosses and lichens were also made. The northern lights never attained the brilliancy observable in Scandinavia.

Nordenskiöld calls attention to the difference in the coast east to that west of the Lena: "On the western side the country rises northward almost to the 78°, or to a latitude exceeded in very few places on the Polar sea, and where we may generally fear to encounter impenetrable masses of ice. On the eastern side the coast slopes gradually southward, and the sound which unites the waters of the Arctic sea with those of the Pacific ocean is situated south of the Polar circle, or in about the same latitude as Haparanda.[1] On the western side the coast stretches out in a wide, treeless Tundra, while on the other side the forest boundary between the Lena and Behring strait extends in many places nearly to the coast. On the western side the coast lines are very incorrectly represented on the charts, so that we have sailed over a surface of nearly five hundred kilometres laid out as land on the latest maps of Siberia. But we have not been able to discover any considerable errors in the charts of the eastern coast."

On July 18th they were at last set free and entered Behring strait, and after stopping at Saint Lawrence bay, Port Clarence and Saint Lawrence island, they visited Behring island, where remains of the gigantic animal, *Rhytina stelleri*, exist, and bones sufficient to constitute several almost perfect skeletons were obtained. On the 2d of September, 1879, the *Vega* arrived safely at Yokohama, Japan.

While the north-east passage has thus been made successfully, it is doubtful whether the commercial results will be very important. The time during which the channel thus shown to exist, remains open, it is to be feared is too brief, and the risks of navigation too great, to afford much encouragement to the merchants of San Francisco to open trade with Siberia, as suggested by M. Siberiakoff in a letter to the New York *Herald*.

The commerce that was springing up on the western side from Europe, through the Sea of Kara to the Obi and Yenisei, has received a serious check this summer, as none of the six steamers attempting the voyage have been able to penetrate the ice which has obstructed the approaches to the Kara sea.

Not the least remarkable incident in the voyage of the *Vega* was the audience given the explorers by the Mikado of Japan and the honors paid them by the Tokio Geographical Society, the Asiatic Society of Japan and the General Asiatic Society at a banquet, at which the President of the Geographical Society, a prince of the imperial blood, presided.

Petermann's *Mittheilungen* for May, 1879, contains a valuable article, by M. Lindeman, on the north coast of Siberia, from the mouth of the Lena to Behring strait and is accompanied by an excellent and very detailed map in two sheets. An account of the authorities relied on, and the sources of information regarding this region used in preparing this map is given by the author, B. Hasentine, in the number for June.

PROCEEDINGS OF THE GEOGRAPHICAL SECTION OF THE BRITISH ASSOCIATION.—The British Association for the Advancement of Science held its forty-ninth meeting at Sheffield, from the 20th to the 27th of August. While the general attendance was much smaller than usual, the Geographical Section, under the presidency of Mr. Clements R. Markham, and favored with the presence of several distinguished travelers from abroad, had large assemblages at all its sessions. Mr. Markham, in his opening address, treated of the objects and aims of geographers and the position which the science holds, relatively, with reference to other sciences, and positively as a distinct body of knowledge with definite limits.

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[1] At the head of the Gulf of Bothnia.—*Editor*.

"We are still very far indeed," he said, "from an accurate scientific geographical knowledge of even the most civilized countries, while by far the largest portion of the earth's surface is inadequately surveyed, and a smaller, though far from inconsiderable, part is unsurveyed or entirely unknown. In the division of labor, the geodetist produces the accurate large-scale maps which are necessary in thickly populated countries, the topographical surveyor furnishes less exact maps of more thinly peopled and less civilized regions, while the trained explorer forces his way into the unknown parts of the earth.

Accurate maps are the basis of all inquiry conducted on scientific principles. Without them a geological survey is impossible; nor can botany, zoölogy or ethnology be viewed in their broader aspects unless considerations of locality, altitude and latitude are kept in view.

The surveying and mapping of the ocean is only second in importance to that of the land; and this work also divides itself into three sections, namely: the coast surveyed, the coasts partially surveyed and the unsurveyed coasts. Hydrography will not be completed until all the coasts in the world are included in the first section, which is now very far indeed from being the case. He had spoken of the measurement of the surface of land and sea, and of their heights and depths; to the mapping of the world and to the innumerable uses of maps and charts. But this only forms the skeleton of our science, which is endued with flesh and blood, with life and motion by those who study the causes and nature of the changes that have taken place and are now taking place upon the earth; by comparative and physical geographers, by those who study and classify natural phenomena, and demonstrate their connection with each other and their places in the great scheme of nature. The importance of the study of history and of early narratives for the elucidation of points in physical geography will appear from the consideration of a few instances. Take, for example, the great and fertile basin of the River Ganges, in India. The Sanscrit historian finds reason for the belief that in 3000 B. C. the only habitable part of the alluvial plain of India was the water-parting or ridge between the Sutlej and the Jumna. The rest was a great estuary or arm of the sea. It has only been fit for man's occupation within the historical period, and hundreds of square miles of the delta have become habitable since the days of Lord Clive. The wonderful history of these changes can be traced by the student, who thus enables the geographer to explain the phenomena which he observes. Again, to pass to another part of the world. The student of history reads of the great sea fight which King Edward III fought with the French off Sluys; how in those days the merchant vessels came up to the walls of that flourishing seaport by every tide; and how, a century later, a Portuguese fleet conveyed Isabella from Lisbon, and an English fleet brought Margaret of York from the Thames to marry successive Dukes of Burgundy at the port of Sluys. In our own time if a modern traveler drives twelve miles out of Bruges across the Dutch frontier he will find a small agricultural town surrounded by cornfields, and meadows, and clumps of trees, whence the sea is not in sight from the top of the town-hall steeple. This is Sluys. A physical geographer will seek out the causes which have brought about this surprising change. They are most interesting, and most conducive to an intelligent comprehension of his science, and he will find them recorded in history. Thus the historian and the geographer work hand in hand, each aiding and furthering the researches of the other."

The second day's session was devoted to African exploration and papers by Maj. Serpa Pinto and Lieut. Savorgnan de Brazza on their recent journeys, were read. Of Maj. Pinto's journey, Com. Cameron remarked that it was one of the greatest ever made, his positions were accurately laid down and his observations were carried out in such a way as had never been done on any previous expedition, and when his book was published they would have a mass of scientific knowledge such as had rarely, if ever, been acquired in the same space of time and with the same limited amount of means at command.

Several important papers on Afghanistan were read, which had been prepared by officers and others with the English army during the war. Many explorations have been made in the unknown portions of this country, and the most important result is the destruction of the belief heretofore held that there were only three entrances into India on the north-west, and that if these passes were blocked up India was safe. It now appears, as stated by the president, that the whole country, from Jellalabad to the Bolan pass, could be crossed in any direction, and that the several roads were perfectly free and open grass plains except where they debouch on the Indian plains. The "scientific boundary," therefore, has no existence, and there must be a continuous frontier from north to south with lateral communications along it.

A paper on Arctic research, by Com. L. A. Beaumont, R.N., of the recent British Arctic expedition, advocated the prosecution of the work by way of Smith's sound to the land around Cape Britannia. This involves the discovery of the northern side of Greenland. He prefers this route to an attempt along the eastern side because a higher latitude can be reached by Smith's sound, and he believed that a vessel might winter on the eastern shore of Robeson strait and advance depots to Repulse harbor in the autumn. Com. Beaumont, who has seen Cape Brittannia, the most northern known point of Greenland, believes that to stand on its highest peak would alone throw much light on Greenland geography.

A paper, by H. Rink, on "The Interior of Greenland" was read. This paper pointed out the principal feature, ice, in the interior of Greenland, and gave an account of the proceedings of recent expeditions for its exploration. The center of the country was stated to be a mass of movable ice. On this paper Com. Beaumont described a small tribe of people in the north of Greenland, cut off from all other peoples by glaciers. They hunted the seal, and would sit over a hole for three days in cold that would kill any other person. They were well disposed to Arctic explorers, but were dying out, two hundred only remaining of a once large tribe. The wonder of this people at seeing a ship was beyond all description.

A paper, by Lieut. Com. Wyse, on "The Exploration of the American Isthmus and the Inter-oceanic Canal" gave an account of the route selected by the recent International Congress at Paris. Adverse opinions to the scheme were expressed by Com. Cameron and other members.

MICROSCOPY.[1]

MICROSCOPICAL LABORATORY.—Dr. Carl Seiler, of Philadelphia, has opened a laboratory for the instruction of students in histology, pathology, and microscopical technology. A fee of $15 is charged for a course of twelve lessons. Microscopical examinations of pathological and other specimens will be made to order, and a large variety of histological and pathological specimens will be prepared for sale.

TRICHINA SPIRALIS.—Dr. Jas. A. Close, of Summerfield, St. Clair Co., Ill., is mounting specimens of this parasite in its different stages of development, by a modification of Beale's method, with considerable success. These difficult objects can be obtained from him by mail.

REMOVAL.—Wm. Wales has removed from Fort Lee, N. J., to No. 361 West 34th St., New York City. At this address he intends to keep a full supply of goods by Zentmayer, Beck and other makers, for the accommodation of those who may wish to

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[1] This department is edited by Dr. R. H. WARD, Troy, N. Y.